

**METHOD OF NOISE REDUCTION USING  
INSTANTANEOUS SIGNAL-TO-NOISE RATIO AS  
THE PRINCIPAL QUANTITY FOR OPTIMAL  
ESTIMATION**

ABSTRACT OF THE DISCLOSURE

A system and method are provided that accurately estimate noise and that reduce noise in pattern recognition signals. The method and system define a mapping random variable as a function of at least a clean signal random variable and a noise random variable. A model parameter that describes at least one aspect of a distribution of values for the mapping random variable is then determined. Based on the model parameter, an estimate for the clean signal random variable is determined. Under many aspects of the present invention, the mapping random variable is a signal-to-noise ratio variable and the method and system estimate a value for the signal-to-noise ratio variable from the model parameter.